

## **Section-III. Technical Specifications / TORs**

### **Scope of Services**

Technical Specifications and Scope of Services are described as under;

**SOLID WASTE MANAGEMENT (SWM)**  
**OPERATIONS PLAN**  
**FOR**

|                 |                            |
|-----------------|----------------------------|
| <b>District</b> | <b><u>Attock</u></b>       |
| <b>Tehsil</b>   | <b><u>Hassan Abdal</u></b> |



**July, 2024**  
**Rawalpindi Waste Management Company**

## **List of Abbreviations**

|                      |  |
|----------------------|--|
| <b>BW</b>            | Bulk Waste                               |
| <b>DC</b>            | District Council                         |
| <b>DtD</b>           | Door to Door                             |
| <b>DS</b>            | Dumpsite                                 |
| <b>HH</b>            | Household                                |
| <b>KM</b>            | Kilo Meter                               |
| <b>LGCD</b>          | Local Government & Community Development |
| <b>RWMC</b>          | Rawalpindi Waste Management Company      |
| <b>MC</b>            | Municipal Committee                      |
| <b>MSW</b>           | Municipal Solid Waste                    |
| <b>M<sup>3</sup></b> | Cubic Meter                              |
| <b>SOP</b>           | Standard Operating Procedure             |
| <b>SWM</b>           | Solid Waste Management                   |
| <b>SW</b>            | Sanitary Worker                          |
| <b>TCP</b>           | Temporary Collection Point               |
| <b>UC</b>            | Union Council                            |
| <b>WB</b>            | World Bank                               |

## 1. Demography

The current Local Government and Community Development (LGCD) division of Tehsil/District comprises a blend of Municipal Committees and the District Council. According to existing demography, the urban sector of the Tehsil consists of Municipal Committees, while the remaining areas fall under the jurisdiction of the District Council. Municipal Committees are organized into wards, whereas the District Council comprises Union Councils, encompassing villages, towns, and semi-urban areas within the Tehsil.

Tehsil Hassan Abdal comprises MC Hassan Abdal having 2 Urban and 7 Rural UCs. The main particulars of tehsil Hassan Abdal are as follow;

**Table 1: Summary of Tehsil Hassan Abdal**

| District    |                  | Attock       |
|-------------|------------------|--------------|
| Tehsil / MC |                  | Hassan Abdal |
| No. of MCs  |                  | 1            |
| Urban       | UCs              | 2            |
|             | Population       | 76,135       |
|             | HH               | 11,449       |
|             | Waste (tons/day) | 32           |
| Rural       | Villages         | 48           |
|             | UCs              | 7            |
|             | Population       | 113,157      |
|             | HH               | 17,093       |
|             | Waste (tons/day) | 37           |
| Total       | UCs              | 9            |
|             | Population       | 189,292      |
|             | HH               | 28,542       |
|             | Waste (tons/day) | 69           |

Note: 0.42 kg/capita/day for Urban and 0.33kg/capita/day for Rural. Waste generation is an estimated amount and it may vary ( $\pm$ ) from the above mentioned amount. However, any approval regarding change in estimated waste generation will be sought from the Board of Directors, RWMC.

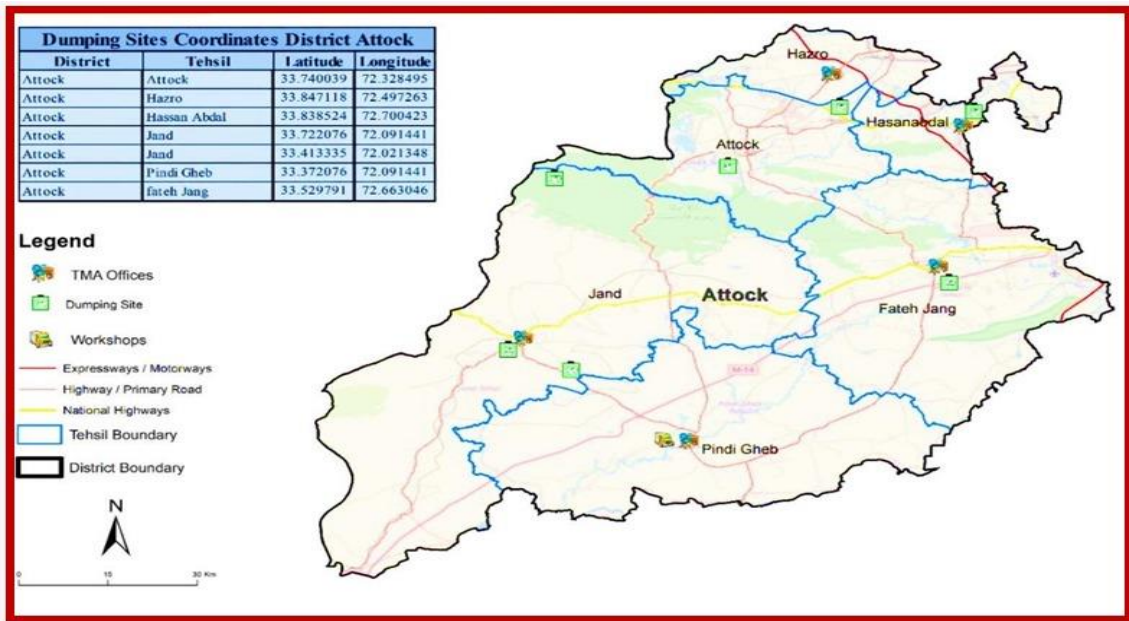


Figure 1: Map of District Attock

## 2. Existing Resources:

The lists / Annexures provided with Services And Assets Management Agreement (SAAMA) signed between RWMC and Tehsil's MCs and DCs is considered for existing resources assessment, given below in Table;

**Table 2: Summary of Existing Resources of tehsil Hassan Abdal**

| Human Resource |                      |                                   |                                       |
|----------------|----------------------|-----------------------------------|---------------------------------------|
| Tehsil         | Sanitary Supervisors | Sanitary Workers                  | Driver                                |
| Hassan Abdal   | 1                    | 35                                | 1                                     |
| Machinery      |                      |                                   |                                       |
| Tehsil         | Tractor Trolley      | Compactor 7m <sup>3</sup>         | Mini Tipper                           |
| Hassan Abdal   | 0                    | 0                                 | 0                                     |
|                | Dumper (10 CM)       | Tractor Loader / Front End Loader | Tractor Mounted Water Booser / Washer |
|                | 0                    | 3                                 | 0                                     |
|                | Rickshaws            | Tractor Mounted Sweeper           | Tractor with Hoe / Drain Cleaner      |
|                | 6                    | 0                                 | 0                                     |
| Equipment      |                      |                                   |                                       |
| Tehsil         | Container            | Hand cart                         | Bin / Drum                            |
| Hassan Abdal   | 0                    | 0                                 | 0                                     |

### 3. Waste Streams

The solid waste being generated in any area is divided into two streams i.e. Municipal Solid Waste (MSW) and Bulk Waste. Whereas, the total solid waste generation is calculated for urban areas is based on 0.42 kg per capita per day and for rural areas it's based on 0.33 kg per capita per day.

#### i Municipal Solid Waste (MSW)

Municipal solid waste (MSW), is a waste type consisting of everyday items that are discarded by the public, including items like food scraps, packaging materials, paper, plastics, glass, and other disposable items. For the SMW planning of the tehsil, 70% MSW generation in urban areas and 55% in rural areas, is estimated through best available information with the tehsil administration of total waste generated.

#### ii Bulk Waste (BW)

Bulk Waste refers to the large quantities of waste that are too large or heavy to be collected through dedicated collection methods. Examples include construction debris, animal dung, and backlog mixed waste lying in open plots or open spaces anywhere in the tehsil. Proper collection of bulk waste typically requires special handling and collection procedures.

**Table 3 Waste Generation Estimates**

| <b><i>Parameter</i></b>                                   | <b><i>Urban</i></b>        | <b><i>Rural</i></b>        |
|---|----------------------------|----------------------------|
| <b>Waste Generation Rate<sup>1</sup></b>                  | 0.42 kg per capita per day | 0.33 kg per capita per day |
| <b>Municipal Solid Waste (MSW) Proportion<sup>2</sup></b> | 70%                        | 55%                        |
| <b>Bulk Waste (BW) Proportion<sup>2</sup></b>             | 30%                        | 45%                        |

### 4. Required SWM Operations Plan

In order to properly plan the SWM system of an area, it's highly significant to understand the infrastructure, socio-economic conditions, development resources and topographical dynamics of that area. RWMC team visited each Municipal Committee and Union Council of the Tehsil to assess the requirements for proposed SWM system.

Various parameters have been collected from the discussion with concerned administrative officials and projected with the help of statistical models. The future system has been designed on the basis of:

- Population projection.
- Waste generation in these areas.
- Classification of SWM Services

<sup>1</sup> ADB Briefs No: 209, March 2022, Waste Sector Inclusion in the Revised Nationally Determined Contributions of Pakistan

<sup>2</sup> This proportion is agreed upon based on survey, feedback and discussion with the relevant Tehsil staff.

Upon area handover, the contractor must adhere to the outlined responsibilities, which serve as guidelines and minimum requirements. The contractor is also responsible for delivering top-quality services governed by the contract document.

The contractor will provide uniforms, shoes and jackets to supervisors, sanitary workers, and helpers as per following details.

- Uniforms of approved design by the client      Twice a year
- Shoes of approved design by the client          Once a year
- Jackets of approved design by the client        Twice a year

The contractor will ensure the availability of proper PPE's to their workforce. Fleet/Vehicles and containers will be branded and designed by the contractor on the approved design by the client.

The detailed scope of services and proposed model is given below;

#### **4.1. Scope of Services**

- a. Mechanical Sweeping and Washing (Urban)
  - i. Mechanical Sweeping & Scrapping
  - ii. Mechanical Washing
- b. Manual Sweeping & De-silting
- c. Primary Waste Collection
  - i. Door to Door MSW Collection
  - ii. Bulk Waste (BW) Collection
- d. Temporary Waste Storage
  - i. Waste Enclosures
  - ii. Temporary Collection Points (TCP)
- e. Secondary Waste Collection
- f. Waste Disposal
- g. Zero Waste Activities
  - i. At the time of Tehsil takeover (once in the whole contract life)
  - ii. At least three to four times in a year or as per clients' requirement at different times.
- h. Public awareness campaign as approved by the client.
- i. Revenue Collection by contractor.

## 4.2. Proposed Model

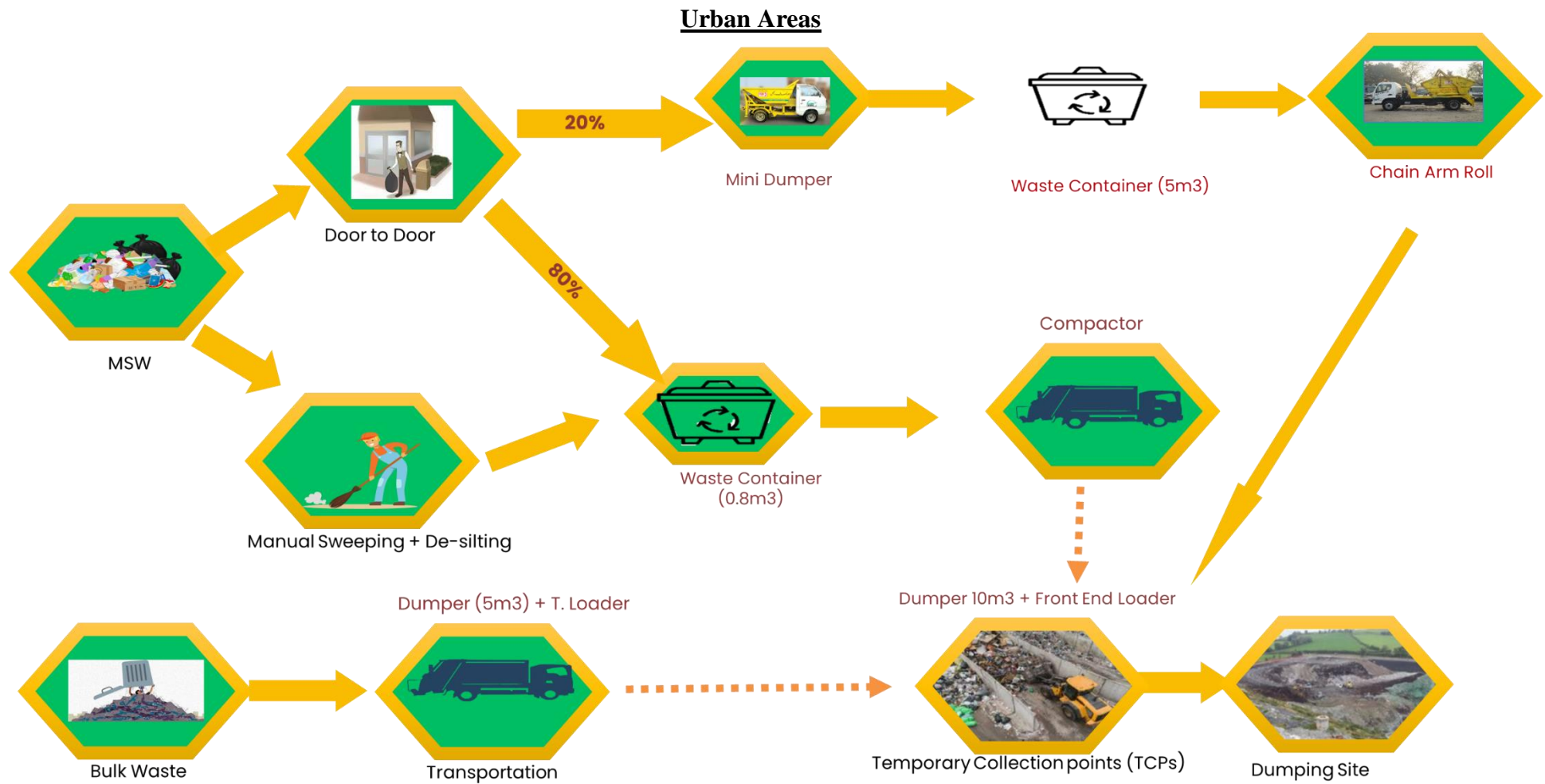


Figure 1: Proposed SWM Model for Urban Areas



## Rural Areas

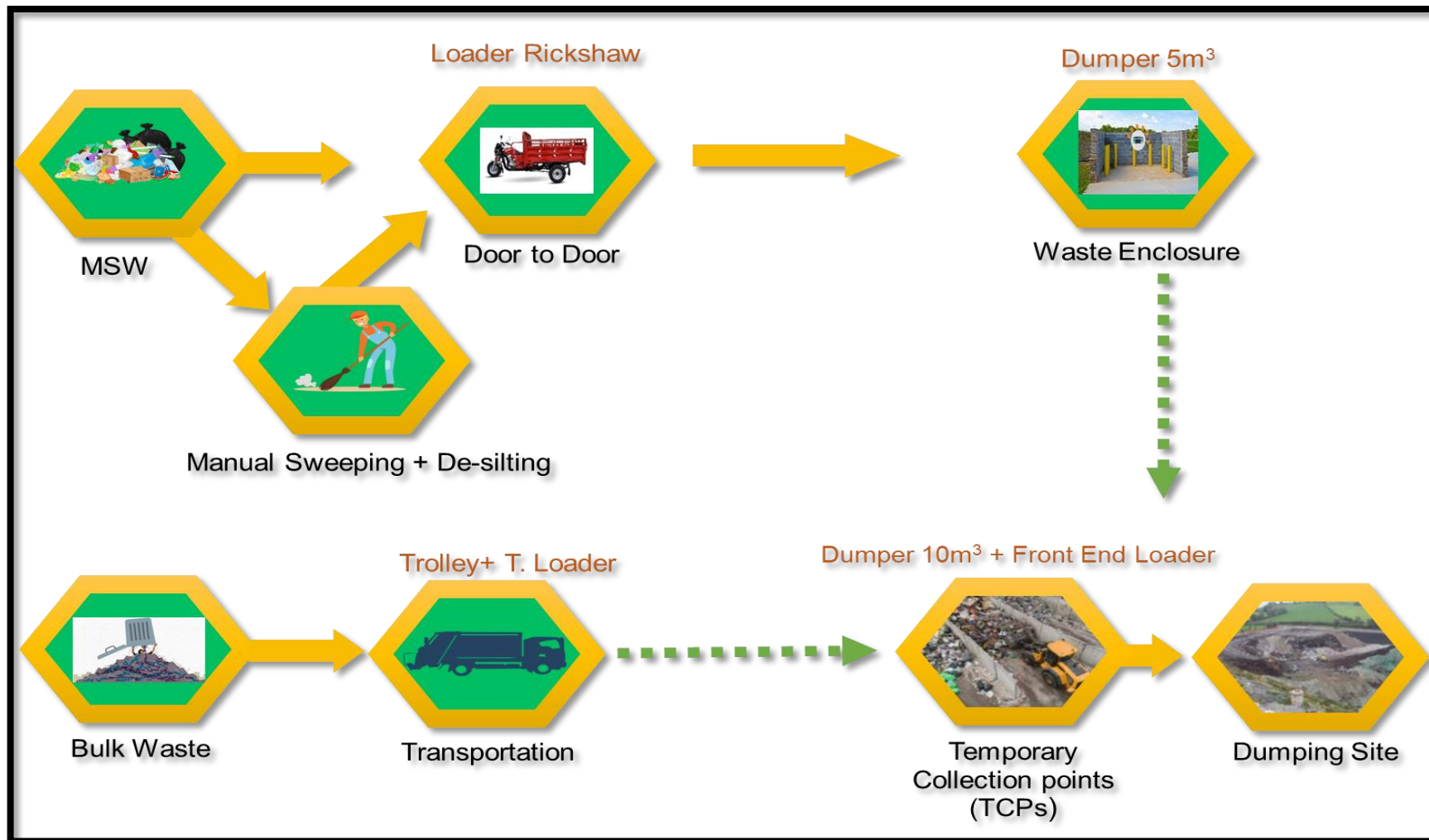


Figure 2: Proposed SWM Model for Rural Areas

## A. Mechanical Sweeping and Washing (Urban)

### i. Mechanical Sweeping & Scraping

Mechanical sweeping, especially with vacuum equipment, can remove dust and rubbish simultaneously, a task not possible with manual sweeping alone. While manual sweepers clear litter from pavements and grass, technical limitations and street obstacles like parked cars mean mechanical cleaning is most efficient alongside manual cleaning. Improved sweeping machines are now quieter, more economical, and meet emission standards, reducing the need for general personnel and allowing for more specialized roles like drivers and street sweepers. Additionally, the contractor will use appropriate tools and machinery for scraping activity of roads and client identified areas, removing accumulated mud, debris, and worn materials. The contractor is responsible for ensuring these areas are clean.

It is proposed to clear the major roads (min. 20 KM daily) of the tehsil through 01 Tractor Mounted Sweeper to improve the working efficiency as well as the cleanliness standards of the tehsil.

### i. Mechanical Washing

Mechanical washing is another importance component of waste management system where, public places, major roads, dividers, walkways are washed to improve the cleanliness impact. It is proposed to wash / sprinkle the major roads as specified by the client (min. 05 KM daily per 01 tractor mounted water bowser / washer), walkways of the tehsil through washer to improve the working efficiency as well as the cleanliness standards of the tehsil.

**Table 4: Kind of Resources Required for Mech. Sweeping and Washing**

| <b><i>Resources</i></b>                 | <b><i>Urban</i></b> | <b><i>Rural</i></b> |
|---|---------------------|---------------------|
| <b>Helpers</b>                          | ✓                   | ×                   |
| <b>Drivers</b>                          | ✓                   | ×                   |
| <b>Tractor Mounted Sweepers</b>         | ✓                   | ×                   |
| <b>Tractor Mounted Bowser / Washers</b> | ✓                   | ×                   |

**Table 5: Main Parameters for the Mech. Sweeping and Washing Activity**

| <b><i>Parameter</i></b>               | <b><i>Urban</i></b>   |
|---------------------------------------|---|
| <b><i>Helpers</i></b>                 | 1 per Tractor Mounted Bowser / Washer                         |
| <b><i>Drivers</i></b>                 | 1 per Tractor Mounted Sweeper<br>1 per Tractor Mounted Washer |
| <b><i>Tractor Mounted Sweeper</i></b> | 1 no.<br>6 hours a day per TMS and min. 20 km per day per VS  |

|                               |  |
|-------------------------------|--|
| <b>Tractor Mounted Washer</b> | 01 nos.<br>6 hours a day per washer and min. 5 km per day per washer |
| <b>Frequency</b>              | Daily  |

**Contractor's Responsibility:**

- Identification of the roads for mechanical sweeping and washing
- Formulation of the teams for mechanical sweeping and washing
- Formation of the schedule for mechanical sweeping and washing - Micro planning
- Deployment of resources as designed
- To arrange water sources for mechanical washing
- To train and guide the helpers and drivers on complete mechanical sweeping and washing mechanism
- To ensure adequate mechanical sweeping and washing as per given resources, mechanism and design parameters

**B. Manual Sweeping & De-silting**

For major roads and inner streets cleaning in the tehsil, manual sweeping will be ensured. Moreover, Open drains are present in the urban area of tehsil, which needs regular de-silting to avoid any clogging of drains.

**Mechanism:**

**Manual Sweeping:** A dedicated team of sanitary workers with handcarts will be deployed to ensure proper manual sweeping and de-silting of the tertiary drains (i.e. 2 feet wide open) in the given areas. Manual sweeping of residential areas will be done as per the client's specified frequency. Meanwhile, commercial areas, both rural and urban of whole tehsil, will be swept daily. This activity will be monitored by the client through their digital monitoring system and staff.

The dedicated teams will engage in manual sweeping where infrastructure is present, such as metaled roads, rigid pavements & tuff paved streets etc. The workers will make small heaps of the collected waste on roads or streets sides and then collect the waste and dump in the nearby container.

**De-silting:** These dedicated teams /gangs of sanitary workers will also perform de-silting of tertiary drains (2 feet wide open) and collect waste from water channels. This silt will then be collected through hand carts and will be unloaded into nearby container or mini dumpers.

Moreover, a drain cleaner will be also being deputed in each tehsil for drain cleanliness purposes.

**Table 6: Kind of Resources Required for the Manual Sweeping and Desilting**

| <b><u>Resources</u></b>                  | <b><u>Urban</u></b> | <b><u>Rural</u></b> |
|--|---------------------|---------------------|
| Sanitary Workers                         | ✓                   | ✓                   |
| Hand Carts                               | ✓                   | ✓                   |
| Brooms                                   | ✓                   | ✓                   |
| Drain Cleaner and other De-silting tools | ✓                   | ✓                   |

**Table 7: Main Parameters for the Manual Sweeping and Desilting Activity**

| <b><u>Parameter</u></b>       | <b><u>Urban</u></b>   | <b><u>Rural</u></b> |
|-------------------------------|-----------------------|---------------------|
| Sanitary Workers (SW)         | 1 SW per 1000 persons | 1 SW per 250 HH     |
| Hand Carts                    | 1 per 2 SW            | 1 per 2 SW          |
| Frequency (Residential areas) | Thrice a Week         | Twice a Week        |
| Frequency (Commercial areas)  | Daily                 | Daily               |
| Drain Cleaner                 | 1 no.                 | 1 no.               |

**Contractor's Responsibility:**

- Formulation of the beats and respective teams of sanitary workers for manual sweeping and de-silting
- Formation of the schedule for sanitary workers – Micro-planning
- Provision of resources
- To train and guide the sanitary worker on complete manual sweeping and de-silting mechanism
- To ensure 100% Manual sweeping and de-silting as per given targets, resources, mechanism and design parameters

**C. Primary Waste Collection**

**i. Door to Door MSW Collection**

**Mechanism:**

For residential and commercial areas, 100% door to door (DtD) waste collection is proposed to ensure maximum cleanliness in the area.

**Urban:** For the DtD services (reference to Figure 11), the waste collection is divided in to two modes i.e. Container based (80%) and Mini Dumpers (20%). A team of dedicated sanitary workers based on 1 sanitary worker per 1000 populations (Urban Areas) will be deployed to collect waste from doorsteps.

1 handcart will be given per 02 sanitary workers which will be emptied in nearby container. These containers will be emptied in the compactors.

Whereas, the Mini Dumpers will also be given for door to door collection. These mini dumpers will be emptied at the nearby compactor of 5 CM from where Chain Arm Roll will lift the container and disposed off it at TCP.

**Rural:** For DtD services, 100% of MSW will be collected from doorsteps using mini dumpers, each staffed with one driver & one helper / sanitary worker. 01 Mini Dumper will be allotted for 250 HH on alternative days. These mini dumpers will transport the waste to the nearest Waste Enclosure. DtD collection through mini dumpers in entire rural tehsil will be done thrice a week.

- **Installation of Drums of Approved Design:** In rural areas, door-to-door waste collection will be done on alternative days. To prevent littering and provide proper disposal of household waste, drums will be installed in all rural UCs of the tehsil, with one drum per 1,500 people. These drums will be emptied into mini dumpers or tractor trolleys.

**Table 8: Kind of Resources Required for the Door to Door Collection**

| <b><u>Resources</u></b>            | <b><u>Urban</u></b> | <b><u>Rural</u></b> |
|------------------------------------|---------------------|---------------------|
| <b>Sanitary Workers</b>            | ✓                   | ✓                   |
| <b>Helpers</b>                     | ✓                   |                     |
| <b>Drivers</b>                     | ✓                   | ✓                   |
| <b>Hand carts</b>                  | ✓                   | ×                   |
| <b>Containers 0.8m<sup>3</sup></b> | ✓                   | ×                   |
| <b>Mini Dumpers</b>                | ✓                   | ✓                   |
| <b>Containers 5m<sup>3</sup></b>   | ✓                   | ×                   |
| <b>Chain Arm Roll</b>              | ✓                   | ×                   |
| <b>Drums</b>                       | ×                   | ✓                   |
| <b>Compactors 7m<sup>3</sup></b>   | ✓                   | ×                   |

**Table 9: Main Parameters for the Door to Door Activity**

| <b><u>Parameter</u></b>           | <b><u>Urban</u></b>  | <b><u>Rural</u></b>           |
|-----------------------------------|--|-------------------------------|
| <b>Door to door collection</b>    | 100 %  | 100%                          |
| <b>Waste collection Frequency</b> | Daily  | Thrice a Week                 |
| <b>Waste availability</b>         | Readily available at doorstep                                | Readily available at doorstep |
| <b>Sanitary Workers</b>           | 1 SW per 1000 Persons  | 1 per Mini Dumper             |
| <b>Helpers</b>                    | 2 per Compactor  |                               |
| <b>Drivers</b>                    | 1 per Compactor<br>1 per Chain Arm Roll<br>1 per Mini Dumper | 1 per Mini Dumper             |
| <b>Hand carts</b>                 | 1 per 2 SW   | -                             |

|                                      |   |   |
|--------------------------------------|---|---|
| <b>Containers (0.8m<sup>3</sup>)</b> | Capacity 250 kg<br>1-time lifting<br>Will handle 80% of generated MSW               | -   |
| <b>Mini Dumpers</b>                  | Min. Capacity 700 kg<br>2-3 trips daily<br>Will handle 20% of generated MSW         | 1 per 250 HH (Alternative days)<br>Capacity 700 kg<br>2 trips daily |
| <b>Compactors 7m<sup>3</sup></b>     | Min. Capacity 4 tons<br>3 to 4 trips to TCP   | -   |
| <b>Containers (5m<sup>3</sup>)</b>   | Min. Capacity 2.5 Tons<br>One-time lifting daily<br>MSW offloaded from Mini dumpers | -   |
| <b>Chain Arm Roll</b>                | Min. Capacity 2.5 tons<br>4-5 trips to TCP  | -   |
| <b>Drums</b>                         | -   | 1 per 1500 Population   |

Number of vehicles / machinery may be changed with the prior approval from Board of Directors- RWMC keeping in view the same volumetric capacity

**Contractor's Responsibility:**

- Formulation of the beats and respective teams of sanitary workers
- Formation of the schedule for sanitary workers – Micro-planning
- Provision of resources
- To train and guide the sanitary worker on complete DtD mechanism
- To ensure 100% DtD services as per given targets, resources, mechanism and assumptions

**ii. Bulk Waste Collection**

**Mechanism:**

**Urban:** Bulk waste (approx. 30% of total waste) will be lifted by using dumpers 5 m<sup>3</sup> and Tractor Loaders. Dedicated sets of Tractor Loader and Dumpers will be deployed in each tehsil to cater the bulk waste on daily basis to ensure zero waste in the entire tehsil. The machinery will be deployed as per schedule to attend all possible areas of the tehsil including open plots, open heaps, dunghills, hotspots, debris etc. These dumpers will directly be unloaded into the nearby TCPs of the tehsil, for further disposal.

**Rural:** Bulk waste (45% of total waste) will be lifted by using Tractor Trolleys and Tractor Loaders. Dedicated sets of Tractor Loader and Trolleys will be deployed in each tehsil to cater the bulk waste on daily basis to ensure zero waste in the entire tehsil. The machinery will be deployed as per schedule to attend all possible areas of the tehsil including open plots, open heaps, dunghills, hotspots, debris etc. These Trolleys will directly be unloaded into the nearby TCPs of the tehsil, for further disposal.

**Table 10: Kind of Resources Required for the Bulk Waste Collection**

| <u>Resources</u>        | <u>Urban</u> | <u>Rural</u> |
|-------------------------|--------------|--------------|
| Drivers                 | ✓            | ✓            |
| Tractor Loaders         | ✓            | ✓            |
| Tractor Trolleys        | ×            | ✓            |
| Dumpers 5m <sup>3</sup> | ✓            | ×            |

**Table 11: Main Parameters for the Bulk Waste Collection Activity**

| <u>Parameter</u>             | <u>Urban</u>   | <u>Rural</u>  |
|------------------------------|--|---|
| <b>Bulk Waste</b>            | 30% of total waste                                   | 45% of total waste  |
| <b>Drivers</b>               | 1 per Tractor Loader<br>1 per Dumper 5m <sup>3</sup> | 1 per Tractor Loader<br>1 per Dumper 5m <sup>3</sup><br>1 per Tractor Trolley |
| <b>Tractor Loader</b>        | 1 per 2-3 Dumpers 5m <sup>3</sup>                    | 1 per 2-3 Dumpers 5m <sup>3</sup><br>1 per 2-3 Trolleys                       |
| <b>Dumper 5m<sup>3</sup></b> | Designed Capacity 3.5 tons<br>5 trips                | -   |
| <b>Tractor Trolley</b>       | -  | Designed Capacity 2.5 tons<br>3 trips   |
| <b>Frequency</b>             | Daily (as per schedule)                              | Daily (as per schedule)   |

**Contractor's Responsibility:**

- Identification of open plots, heaps, dunghills, hotspots, debris and illegal dumping points.
- Formation of the schedule for the machinery sets for clearance of bulk waste on regular basis – Micro-planning
- Provision of resources
- The contractor will use a fleet of trolleys and dumpers, operating at designed capacity, to transport bulk waste.
- The contractor will cover the bulk waste with tarpaulins to prevent any spillage on roads during transportation.
- To train and guide the sanitary worker on complete bulk waste clearance
- To ensure 100% bulk waste clearance as per given targets, resources, mechanism and assumptions

**D. Temporary Waste Storage**

**i. Waste Enclosures (WE)**

For rural areas Waste Enclosures are proposed to unload the Mini dumpers that are carrying door to door collected waste. These Waste enclosures will not only save the transportation time but will also save the cost of trips of Mini dumpers. The machinery at Waste Enclosure is proposed on tonnage lifting basis. It is proposed to establish 03 Waste Enclosures in each Union Council of Rural areas.

**Table 12: Kind of Resources Required for Waste Enclosures**

| <b><i>Resources</i></b>       | <b><i>Rural</i></b> |
|-------------------------------|---------------------|
| <b>Drivers</b>                | ✓                   |
| <b>Dumpers 5m<sup>3</sup></b> | ✓                   |
| <b>Tractor Loader</b>         | ✓                   |

**Table 13: Main Parameters Required for Establishment of Waste Enclosures & Removal of Waste Activity from Enclosures**

| <b><i>Parameter</i></b>                           | <b><i>Rural</i></b>               |
|---|-----------------------------------|
| <b>Number of Enclosure</b>                        | 3 Enclosures per UC               |
| <b>Clearance Frequency</b>                        | Twice a week                      |
| <b>Area</b>                                       | 5 – 7 Marlas                      |
| <b>Specifications</b>                             | RCC flooring<br>Precast Planks    |
| <b>Dumpers 5m<sup>3</sup> for waste enclosure</b> | Capacity 3 tons<br>5 trips        |
| <b>Tractor Loader</b>                             | 1 per 2-3 Dumpers 5m <sup>3</sup> |

**Contractor's Responsibility:**

- Identification of sites for establishment of Waste Enclosures (WEs)
- Formulation of specifications of the WEs and their approval from concerned client and authorities
- Establishment of Wes as per designed number and as per approved / agreed specifications

**ii. Temporary Collection Points (TCPs)**

The farther the ultimate disposal site is from the collection area, the greater the savings that can be realized from use of a Temporary Collection Point (TCP). The



minimum distance at which use of a TCP becomes economical depends on local economic conditions.

**Mechanism:**

The MSW and BW collected from entire tehsil through different collection modes and machinery will ultimately be collected at the Temporary collection points (TCPs). Waste collection vehicles will temporarily dump waste at TCPs from where it will be transported to dumpsite for controlled disposal on daily basis. The TCPs will be established in the tehsil as per requirement. The TCPs to be designed to cater at least 150 to 200 tons of solid waste on an areas measuring 2 to 3 Kanals. The complete management of TCPs as per standard practices from establishment to clearance and maintenance would be the responsibility of respective contractor.

**Table 14: Main Parameters for Establishment of TCPs & Removal of Waste from TCPs**

| <b><i>Parameter</i></b>    | <b><i>Urban</i></b>            | <b><i>Rural</i></b>            |
|----------------------------|--------------------------------|--------------------------------|
| <b>Areas</b>               | 2 Kanals                       | 2 Kanals                       |
| <b>Capacity</b>            | 150 to 200 tons                | 150 to 200 tons                |
| <b>Specifications</b>      | RCC flooring<br>Precast Planks | RCC flooring<br>Precast Planks |
| <b>Clearance Frequency</b> | Daily                          | Twice a week                   |

**Contractor’s Responsibility:**

- Formulation of specifications of the TCPs and their approval from concerned client and authorities
- Establishment of TCPs as per designed number and as per approved / agreed specifications

The tentative list of TCPs for the tehsil is as under;

**Table 15: List of Tentative TCPs**

| <b>Urban + Rural (Joint)</b> |                   |
|------------------------------|-------------------|
| <b>1</b>                     | Hassan Abdal City |

**E. Secondary Waste Collection**

Secondary Waste collection refers to transportation of waste from Temporary Collection Point (TCP) to disposal site. For the said secondary waste collection purposes dedicated machinery sets Dumpers 20m<sup>3</sup> and Front End Loaders are deployed at each TCP. The TCPs are cleared on daily basis to ensure Zero waste.

**Table 16: Main Parameters Required for Establishment of TCPs**

| <u>Parameter</u>               | <u>Urban</u>   | <u>Rural</u>   |
|--------------------------------|--|--|
| <b>Drivers</b>                 | 1 per Dumper 10m <sup>3</sup><br>1 per Front End Loader    | 1 per Dumper 10m <sup>3</sup><br>1 per Front End Loader    |
| <b>Dumpers 20m<sup>3</sup></b> | Capacity 15 tons<br>5 trips to DS<br>Minimum 1 at each TCP | Capacity 15 tons<br>5 trips to DS<br>Minimum 1 at each TCP |
| <b>Front End Loader</b>        | 1 per TCP  | 1 per TCP  |
| <b>TCP clearance Frequency</b> | Daily  | Daily  |

**Contractor's Responsibility:**

- Deployment of resources as designed
- TCPS management and maintenance on regular basis
- To ensure waste clearance from TCPs as per given targets, resources, mechanism and assumptions
- Waste clearance frequency for joint TCP (urban and rural) will match the urban schedule of daily clearance.

**F. Waste Disposal**

The contractor will establish a controlled dumpsite including Weigh Bridge with all its allied facilities of civil works & IT equipment's to minimize environmental and health hazards. A 3-feet thick clay lining will be installed on the foundation/embankment with a slope specified by the client based on existing ground conditions. The clay lining will have an acceptable permeability limit. The embankment will be designed to allow leachate to flow by gravity to a designated collection point. This leachate will be collected with a gully sucker and regularly sprinkled on access roads and waste. Furthermore, fencing for access control, daily soil covering to prevent waste spread, pests, scavenging, and fires, with staff and machinery to ensure proper waste handling. The List of resources is tabulated below. Moreover, the contractor will establish a controlled dumping site until then, the contractor will arrange make shift arrangements for waste dumping / disposal.

**Table 17: Kind of Resources Required for Controlled Dumpsite**

| <u>Parameter</u>   | <u>Unit</u> | <u>Definition</u> |
|--------------------|-------------|-------------------|
| <b>Design Area</b> | Acre        | 10 Acres          |

| <b>Design Life</b>                                       | <b>Years</b>                 | <b>7 Years</b>  |
|--|------------------------------|---|
| <b>Pit less Weigh Bridge &amp; its allied facilities</b> | 30 feet X 10 feet            | Pit less weigh bridge as per client approved specifications with all its related civil works i.e. operator room, rigid pavements & allied IT equipment's. |
| <b>Machinery</b>   | Front End Loader             | 1 Front End Loader for waste spreading, compaction, and soil loading  |
|  | Dumpers (10 m <sup>3</sup> ) | 1 Dumper for soil transportation and Backlog removal  |
|  | Gully Sucker                 | 1 Gully Sucker for leachate collection and sprinkling on waste and access roads.  |
|  | Excavator                    | 1   |
|  | Bulldozer                    | 0   |
| <b>Working Hours</b>                                     | 240 Hours                    | 8 hours per day based on daily tonnage  |
| <b>Human Resource</b>                                    | Supervisors                  | 2   |
|  | Ground men                   | 2   |

**Contractor's Responsibility: Installation of Weigh Bridge and allied facilities**

- Establishment of dumpsite as per approved designed standards by the client.
- The contractor will establish a pit-less weighbridge of size 30 feet x 10 feet (30' x 10'), including its supporting structure made of steel with a size of 600 x 200mm x 9 feet 6 inches.
- The cross girder (26 No.) will consist of I-beam, measuring 200 x 100mm x 9 feet 6 inches.
- The supporting girders (02 No.) will be 200 x 100mm x 9 feet 6 inches, incorporating an MS plate of 12mm plane (30 x 10) feet
- Load cell (04 No.) with 40 tons' capacity each.
- Junction box (01 No.) compatible.
- The weighbridge will have a lane size of 30 x 10 feet and a weighing capacity of 60 tons.
- All necessary accessories will be included, and fitting installations will be completed as part of the job. RFID System (complete trunk key solution), IP Cameras, UPS & Generator, Controller, Desktop Computer, AC, AVR (Automatic Voltage regulator) etc.
- Rigid pavements (RCC slab, compacted base course etc.) of minimum 1 feet thickness & length approx. 15 feet on each side of Weigh Bridge as per client approved designed.
- Additionally, the contractor will establish an operator room with a minimum size of 20 x 12 feet, incorporating all necessary facilities such as a toilet, kitchen as per approved designed by client.
- Contractor will build security guard room on top of operator room as per approved designed by the client.

- Weigh bridge control will be in the custody of client i.e. RWMC. Contractor will only establish and maintain R&M related works.
  - Contractor will deploy resources as per client designed criteria.
  - Dumpsite management and maintenance on regular basis as per designed criteria
    - Leveling, compacting and Soil Covering & sprinkling of collected leachate on dumped waste.

## **G. Zero Waste Activities**

The contractor will conduct at least following zero waste activities;

- i. At the time of Tehsil takeover (Once in the whole contract life)
  - ii. At least three to four times in a year or as per clients' requirement at different times done within scope of work.
- ***One Time Cleaning and Rehabilitation/Reclamation of Existing Dump site:***
    - Client may ask to contractor to perform one time cleaning activity for removal of all backlog of waste present in the area identified by the contractor for the approval of the client. For the said activity the contractor will identify the hotspots carrying backlog waste, including open plots, open heaps, depressions etc. along with the coordinates. The contractor will get the list of these identified hotspots approved from the client and will get them clear accordingly.
    - Client may ask to contractor for rehabilitation/reclaiming of existing dumpsite with proposed mechanism identified by the client. The prices of the above two activities will be decided by the client and contractor and intimated to the contractor after the approval of the BOD of Client.
    - In the future, if GOPb establishes MRFs in the respective Tehsils, the contractor may be asked to segregate waste at TCPs. Further, its transportation to the MRF's. Payment for this additional work will be made later, subject to the approval of the client's BOD as per contract.

## **H. Revenue Collection**

Contractor will be responsible for revenue collection in entire tehsil. Detailed mechanism of revenue collection is explained in sub heading 11.

## **I. Public Awareness Campaign**

The contractor's plan will include a public awareness campaign, subject to prior approval from the client. The contractor will submit a detailed micro plan for the campaign, covering schools, residential areas, and commercial areas. Contractor will ensure proper branding of all containers, hand carts, waste drums and operational fleet as per the design / specimen approved by the client.

## 5. Required Resources

### 5.1. Human Resource

**Table 18: Required HR**

| Area         | Description       | Total Required |
|--------------|-------------------|----------------|
| Urban        | SW                | 86             |
|              | Supervisor        | 3              |
|              | Driver            | 14             |
|              | Helpers           | 5              |
| Rural        | SW                | 39             |
|              | Supervisor        | 2              |
|              | Driver            | 23             |
|              | Helpers           | --             |
| <b>Total</b> | <b>SW</b>         | <b>125</b>     |
|              | <b>Supervisor</b> | <b>5</b>       |
|              | <b>Driver</b>     | <b>37</b>      |
|              | <b>Helpers</b>    | <b>5</b>       |

### 5.2. Machinery

**Table 19: Required Machinery**

| Area  | Type of Vehicle                | Total Required |
|-------|--------------------------------|----------------|
| Urban | Mini Dumper                    | 3              |
|       | Compactors (7m3)               | 1              |
|       | Armrolls                       | 1              |
|       | Dumpers (5m3)                  | 2              |
|       | Tractor Loader                 | 1              |
|       | Dumper (20m3)                  | 1              |
|       | Front End Loader               | 1              |
|       | Mechanical Sweeper             | 1              |
|       | Tractor Water Bouzer           | 1              |
|       | Drain cleaner/Tractor with Hoe | 1              |
| Rural | Mini Dumper                    | 17             |
|       | Dumpers (5m3)                  | 2              |
|       | Tractor Loader                 | 1              |
|       | Tractor Trolley                | 2              |

### 5.3. Tools & Equipment

**Table 20: Required Tools & Equipment**

| Area  | Description        | Total Required |
|-------|--------------------|----------------|
| Urban | Containers (0.8m3) | 72             |
|       | Containers (5m3)   | 4              |

|       |            |    |
|-------|------------|----|
|       | Hand Carts | 43 |
| Rural | Drums      | 75 |
|       | Hand Carts | 19 |

#### 5.4. Dumpsite Machinery

**Table 21: Required Machinery for Dumpsite**

| Sr. #        | Description                | Total    |
|--------------|----------------------------|----------|
| 1            | Dumper (10m3)              | 1        |
| 2            | Front End Loader           | 1        |
| 3            | Gully Sucker (4000 Liters) | 1        |
| 4            | Excavator                  | 1        |
| 5            | Bulldozer                  | 0        |
| <b>Total</b> |                            | <b>4</b> |

Note: 1 Driver and 1 Helper of each of the above mentioned dumpsite machinery will be deployed.

## 6. Comparison

### 6.1. Human Resource

**Table 22: Comparison of HR**

| HR          |             |          |
|-------------|-------------|----------|
| Description | Designation | Quantity |
| Required    | SW          | 125      |
|             | Supervisor  | 5        |
|             | Driver      | 37       |
|             | Helpers     | 5        |
| Existing    | SW          | 35       |
|             | Supervisor  | 1        |
|             | Driver      | 1        |
|             | Helpers     | 0        |
| Additional  | SW          | 90       |
|             | Supervisor  | 4        |
|             | Driver      | 36       |
|             | Helpers     | 5        |

### 6.2. Machinery

**Table 23: Comparison of Machinery**

| Machinery (excluding Landfill Machinery) |                 |          |          |            |
|--|-----------------|----------|----------|------------|
| Area                                     | Type of Vehicle | Required | Existing | Additional |
| Urban                                    | Mini Dumper     | 3        | 0        | 3          |

|       |                                |    |   |    |
|-------|--------------------------------|----|---|----|
|       | Compactors (7m3)               | 1  | 0 | 1  |
|       | Armrolls                       | 1  | 0 | 1  |
|       | Dumpers (5m3)                  | 2  | 2 | 0  |
|       | Tractor Loader                 | 1  | 3 | -2 |
|       | Dumper (20m3)                  | 1  | 0 | 1  |
|       | Front End Loader               | 1  | 0 | 1  |
|       | Mechanical Sweeper             | 1  | 0 | 1  |
|       | Tractor Water Bouzer           | 1  | 0 | 1  |
|       | Drain cleaner/Tractor with Hoe | 1  | 0 | 1  |
| Rural | Mini Dumper                    | 17 | 0 | 17 |
|       | Dumpers (5m3)                  | 2  | 0 | 2  |
|       | Tractor Loader                 | 1  | 0 | 1  |
|       | Tractor Trolley                | 2  | 0 | 2  |

### 6.3. Tools & Equipment

**Table 24: Comparison of Tools & equipment**

| <b>Tools &amp; Equipment</b> |                        |                 |                 |                   |
|------------------------------|------------------------|-----------------|-----------------|-------------------|
| <b>Area</b>                  | <b>Type of Vehicle</b> | <b>Required</b> | <b>Existing</b> | <b>Additional</b> |
| Urban                        | Containers (0.8m3)     | 72              | 0               | 72                |
|                              | Containers (5m3)       | 4               | 0               | 4                 |
|                              | Hand Carts             | 43              | 0               | 43                |
| Rural                        | Drums                  | 75              | 0               | 75                |
|                              | Hand Carts             | 19              | 0               | 19                |
| <b>Total</b>                 |                        | <b>213</b>      | <b>0</b>        | <b>213</b>        |

## 7. Special services on Special Events

The contractor will ensure special cleanliness services and availability of requisite resources for special events including;

- Monsoon
- Eid-ul-Fitr
- Ramadan
- Eid-ul-Adha
- Muharram
- Eid Milad-ul-Nabi
- Christmas
- Any other event or emergency

The contractor will prepare proper SWM plan prior to each event for execution accordingly. The SWM plan should cover;

- ➔ Standard Operating Procedure (SOPs)
- ➔ Hotspots as per the event
- ➔ Resources Required
- ➔ Deployment plan

## 8. Overall Monitoring of Operations

The client will develop a digital monitoring system, which will be used for measuring work progress for quality assurance and payment purposes. The Digital Monitoring System will report on predefined Key Performance Indicators (KPIs). It will be IT-based and include field monitoring by the client's supervisory team, village/ward committee notified by the client (VTMS/Digital Monitoring Mechanism).

Moreover, *Work Satisfaction Stakeholder Committee (Village/Ward Committee)* will also be constituted. The committee will consist of representatives from the public, who will be asked to report on the work satisfaction from the public perspective and can be linked with the payment mechanism. The Stakeholder Committee will be formulated by the client, and its members will be decided within a reasonable time from the contract signing. The role of the committee is purely voluntary and will not supersede the management's opinions.

Further, the client will also nominate its committee to resolve any disputes regarding work verification.

In the case of the digital monitoring system being non-functional, the payment will be processed based on the submission of a verification report by the monitoring team of the client clearly based on the performance indicators.

## 9. Human Resource Management

For overall execution of Operations as per plan and its supervision, Sanitary Supervisors are proposed for the overall SMW management. One Supervisor is proposed for 25 Sanitary Workers in both Urban and Rural areas. Administration cost (2% of the operations cost) is included in the project cost.

## 10. Cost Estimates

**Table 25: Costing Detail of tehsil Hassan Abdal\***



|  |                            |
|--|----------------------------|
| <b>Annual Estimated Cost (Rs. in Millions)</b> | <b>PKR 451.1/- Million</b> |
| <b>Cost per Ton (Rs.)</b>                      | <b>Rs.17,829/-</b>         |
| <b>Cost per Capita per Month (Rs.)</b>         | <b>Rs.199/-</b>            |

**Note:**

- Life of 0.8m<sup>3</sup> containers 2 Years
- Life of 5m<sup>3</sup> containers 3 years
- HR Cost is tabulated below;

| <b>Particulars</b> | <b>HR Cost / Employee / Month</b> |
|--------------------|-----------------------------------|
| Sanitary workers   | 41,440                            |
| Supervisors        | 44,620                            |
| Helpers            | 41,440                            |
| Drivers            | 44,620                            |

- HR cost includes salary, social security, EOBI and GLI
- HR cost of existing staff is not included in cost estimates. Only the deficit staff HR cost included in Cost estimates.
- Total cost including of all taxes.
- Escalation factor based on minimum wage of PKR 37,000/month as on July 04, 2024.
- Escalation factor based on high speed diesel price of PKR 277.45 per liter as per PSO as on July 04, 2024.
- 3% of operational cost per year is included for special events/ Eid Ul Azha/zero waste activity.
- 1% of operational cost per year is included as contingency.
- Rental cost of existing resources not included in cost estimates.
- Fitness certificate & emission reports from transport department will be mandatory for rented vehicles.
- Cost of Temporary collection points and waste enclosures is included in cost estimates.
- Janitorial material (broom, lime etc.), PPE (masks, Gloves etc.), uniform Hand carts cost included in cost estimates.
- Cost of PKR 200,000/- per month for public awareness also included in cost estimates
- Hand cart life 1 year.
- Cost estimates are based on 26 working days in a month.
- Monitoring cost of PKR 800,000/- per month (annual PKR 9,600,000/-) included in cost estimates which will be recovered from the contractor after implementation.
- Waste Disposal cost also included.
- All waste carrying/transportation vehicle should be covered properly to avoid littering.
- Monitoring vehicle of 1300 cc will be provided by the contractor to the client till the project period for monitoring purposes and R&M of the said vehicle will be borne by contractor.

## **11. FEE COLLECTION BY CONTRACTOR**

### **I. Fee Collection Responsibilities:**

The contractor providing sanitation services in the Tehsil shall also be responsible for fee collection from the households and commercial entities etc. on the prescribed rates by GOPb and based on the customer database to be provided by the client.

### **II. Administrative / Collection Charges:**

The contractor will be entitled to administrative / collection charges at the incremental / slab based ratios prescribed below in Table 11.1 for the amount of fee collected. However if the contractor fails to collect the desired target (25%, 40%, 60% for year 1, 2, 3 respectively), the contractor shall be penalized at the incremental / slab based ratios prescribed below in Table 11.2.

**III. Fee Deposit and Payment Process:**

- The Contractor shall deposit full amount (100%) of fee collected into the bank account provided by RWMC.
- The contractor will submit separate invoice for administration charges on the fee collected on monthly basis.

**IV. Commencement of Fee Collection:**

Fee collection from households and commercial entities etc. shall commence on a date specified by the client but not later than four months after the execution of the contract. However contractor will ensure zero billing to consumers in that period.

**V. Digital Billing System:**

RWMC will establish a digital billing system to facilitate the contractor in fee collection.

**VI. Enforcement of Bill Recovery:**

RWMC, local governments and the District Administration will enforce and facilitate the bill recovery mechanism under the powers granted to them by the Local Government Act and applicable rules.

**VII. Fee Charges Compliance:**

The contractor is obligated to collect and submit fee charges according to the rates notified by the Government of Punjab (GOPb.).

**Table-11.1: Admin. / Collection Charges Mechanism for Fee Collection**

| Fee Collection Target (of assessed value) | Fee Collected | Contractor Share / Admin. Charges  |
|---|---------------|--|
| <b>25% (1<sup>st</sup> Year)</b>          | 25%           | 10% of the Fee Collected   |
|   | 25% to 50%    | 10% +<br>15% of the additional collection  |
|   | 50% to 80%    | 10% +<br>15% of the additional 25% + 20% of the remaining  |
|   | 80% to 100%   | 10% +<br>15% of the additional 25% + 20% of the additional 30% collection + 25% of the remaining |
| <b>40% (2<sup>nd</sup> Year)</b>          | 40%           | 10% of the Fee Collected   |
|   | 40% to 60%    | 10% +<br>15% of the additional collection  |

|  |             |   |
|--|-------------|---|
|  | 60% to 80%  | 10% +<br>15% of the additional 20% + 20% of the remaining                             |
|  | 80% to 100% | 10% +<br>15% of the additional 20% + 20% of the additional 20% + 25% of the remaining |
| <b>60%</b><br><b>(3<sup>rd</sup> Year)</b> | 60%         | 10% of the Fee Collected  |
|  | 60% to 80%  | 10% +<br>15% of the additional collection   |
|  | 80% to 100% | 10% +<br>15% of the additional 20% + 20% of the remaining                             |

**Table-11.2: Penalty Mechanism for Below Fee Collection Target**

| <b>Fee Collection Target<br/>(of assessed value)</b> | <b>Fee Collected</b> | <b>Contractor Penalty</b>   |
|--|----------------------|---|
| <b>25%</b><br><b>(1<sup>st</sup> Year)</b>           | >20% to <25%         | No Administrative / Collection Charges to the Contractor, No penalty  |
|  | >15% to ≤20%         | No Administrative / Collection Charges & 1% deduction from the monthly Invoice of the Contractor against SWM Services |
|  | >10% to ≤15%         | No Administrative / Collection Charges 2% deduction from the monthly Invoice of the Contractor against SWM Services   |
|  | >5% to ≤10%          | No Administrative / Collection Charges 5% deduction from the monthly Invoice of the Contractor against SWM Services   |
|  | Less than 5%         | Termination proceedings under the contract  |
| <b>40%</b><br><b>(2<sup>nd</sup> Year)</b>           | >25% to <40%         | No Administrative / Collection Charges to the Contractor, No penalty  |
|  | >15% to ≤25%         | No Administrative / Collection Charges 1% deduction from the monthly Invoice of the Contractor against SWM Services   |
|  | >10% to ≤15%         | No Administrative / Collection Charges 2% deduction from the monthly Invoice of the Contractor against SWM Services   |
|  | >5% to ≤10%          | No Administrative Charges 5% deduction from the monthly Invoice of the Contractor against SWM Services                |
|  | Less than 5%         | Termination proceedings under the contract  |
| <b>60%</b><br><b>(3<sup>rd</sup> Year)</b>           | >30% to <60%         | No Administrative Charges to the Contractor, No penalty   |
|  | >20% to ≤30%         | No Administrative Charges 1% deduction from the monthly Invoice of the Contractor against SWM Services                |
|  | >10% to ≤20%         | No Administrative Charges 2% deduction from the monthly Invoice of the Contractor against SWM Services                |
|  | >5% to ≤10%          | No Administrative Charges 5% deduction from the monthly Invoice of the Contractor against SWM Services                |

|  |              |  |
|--|--------------|--|
|  | Less than 5% | Termination proceedings under the contract |
|--|--------------|--|

## **12. PUBLIC AWARENESS CAMPAIGN**

Contractor will ensure proper branding of all containers, hand carts, waste drums and operational fleet as per the design / specimen approved by the client

## **MILESTONES, TIMELINES, KPIs AND PENALTIES**

### **DIGITAL PERFORMANCE MONITORING MECHANISM**

Resource based contract pricing (based on HR, Fleet and Allied Equipment).

#### **Proposed Payment Mechanism**

- HR will be monitored through Facial/Biometric/Android Recognition based Attendance System.
- Waste Collection & Disposal through digital monitoring system at Landfill Site.
- Machinery will be monitored through Artificial Intelligence based Fleet Management Software.
- Container Clearance will be monitored through Digital Monitoring of Fleet and Geo-Tagging of Containers.
- Manual Sweeping and Commercial Areas clearance will be monitored through Digital Monitoring System (pictorial evidence).
- Complaint Management Response Time.
- Execution of Weekly and Monthly plans.

Penalties will be applied through evidence based digital monitoring system in violation of the KPIs.

Contractor's Performance will be monitored digitally through:

- i. Digital Monitoring System for staff attendance, service delivery compliance and KPIs monitoring (Facial/Biometric Recognition, Geo-tagged before after pics, field monitoring through evidence based real time information)
- i. Smart AI based Fleet Management System in all vehicles to check the compliance of each category of vehicle w.r.t operational plan.
- ii. RFID based Vehicle Weighing System at Landfill Site for actual waste collection value transported to disposal site.
- iii. Complaint Redresser System (CRS) through Help Line and Dastak App.

Contractor shall submit operational plans before execution of the operations for client review and approval. Plans will be based on optimal utilization of resources for each activity with defined resources and timeline and to ensure the compliance of work as per SOPs/KPIs defined by the client.

## Proposed Payment Mechanism – Tehsil Hassan Abdal

(The invoice calculation will be based on daily working w.r.t parameters evaluated on daily basis)

| Sr. No | Activity                               | % Value | Key Factors/Variables                                  | KPIs   | Numbers |
|--------|--|---------|--|--|---------|
| 1      | Waste Collection (Tonnage Based value) | 60      | 1. Waste Disposal through Digital Weighing System.     | <ul style="list-style-type: none"> <li>Real time VTCS Report / Trip Counting Application. Contractor has to ensure minimum 75% waste transportation defined by the client at dump site for safe disposal.</li> </ul>   | 40      |
|        |  |         | 2. Container Collection/Clearance as per KPIs.         | <ul style="list-style-type: none"> <li>Deduction of waste collection activity of that day in case non-compliance by complaints/observation/VTMS number increased to 10% of total containers approved as per plan.</li> </ul>   | 3       |
|        |  |         | 3. Deployment of Fleet as per Plan and KPIs.           | <ul style="list-style-type: none"> <li>In case, deficiency number increased to 10% or above, deduction of waste collection activity of that day.</li> </ul>  | 3       |
|        |  |         | 4. Door to Door Waste Collection as per SOPs and KPIs. | <ul style="list-style-type: none"> <li>90 % Compliance of approved plan is mandatory. Processing will be monitored through deployment of resources, area coverage and verification by area officer/committee.</li> <li>2 point deduction of activity in case non-coverage is between 11-15%.</li> <li>5 point deduction in case non-coverage varies from 16-20%.</li> <li>Full deduction in case non-coverage increases above 20%</li> </ul> | 10      |
|        |  |         | 6. Collection from Commercial Areas as per KPIs.       | <ul style="list-style-type: none"> <li>1 point deduction of activity in case non-coverage is less than 10%.</li> <li>2 point deduction in case non-coverage varies from 11-20%. Full deduction in case non-coverage increases above 20%</li> </ul>   | 2       |
|        |  |         | 7. Deployment of Containers as per Plan and KPIs.      | <ul style="list-style-type: none"> <li>In case, deficiency number increased to 10% or above, deduction of waste collection activity of that day.</li> <li>Container repair and aesthetics has to be ensured by contractor.</li> </ul>  | 2       |
|        |  |         | 2  | Manual Sweeping (Number of Workers as per plan vs Actual Present)  | 15      |

|   |  |    |  |   |    |
|---|--|----|--|---|----|
|   |  |    | 2. Street Sweeping (Residential commercial) Clearance as per KPIs  | <ul style="list-style-type: none"> <li>Deduction of manual sweeping activity of that day in case number increased to 100 complaints /observations per day.</li> </ul>   | 05 |
|   |  |    | 3. Street Sweeping (Commercial) Clearance as per KPIs  | <ul style="list-style-type: none"> <li>Deduction of manual sweeping activity of that day in case number increased to 50 complaints/observations/day.</li> </ul>   | 1  |
|   |  |    | 4. Workers Presence at Beats in duty hours   | <ul style="list-style-type: none"> <li>Deduction of manual sweeping activity of that day in case number increased to 100 complaints /observations per day regarding absent of worker.</li> </ul>                                    | 2  |
|   |  |    | 5. Workers allied equipment (uniforms, PPEs, Handcarts, Brooms, Bags etc.) availability as per plan and KPIs | <ul style="list-style-type: none"> <li>Work deduction of the manual sweeping activity in case of deficiency number exceed from 10% of total of non-provision in any of the category mentioned individually/collectively.</li> </ul> | 2  |
| 3 | Mechanical Sweeping (Km Covered as per plan)         | 3  | 1. Deployment of Resources as per plan and KPIs  | <ul style="list-style-type: none"> <li>In case, deficiency number increased to 10% or above, deduction of Mech. sweeping activity of that day</li> </ul>  | 3  |
|   |  |    | 2. Work done/completion as per Plan and KPIs   | <ul style="list-style-type: none"> <li>Work deduction in case of activity impact is less than 90% (not as per the SOPs.)</li> </ul>   |    |
| 4 | Mechanical Washing (Km Covered as per plan)          | 2  | 1. Deployment of Resources as per plan and KPIs  | <ul style="list-style-type: none"> <li>In case, deficiency number increased to 10% or above, deduction of Mech. washing activity of that day</li> </ul>   | 2  |
|   |  |    | 2. Work done/completion as per Plan and KPIs   | <ul style="list-style-type: none"> <li>Work deduction in case of activity impact is less than 90% (not as per the SOPs.)</li> </ul>   |    |
| 5 | TCP/Waste Enclosures Management                      | 05 | 1. Establishment of TCPs as per Timelines, plan and KPIs   | <ul style="list-style-type: none"> <li>Establishment of TCP should be done within the timeline defined by the client. Till non-compliance, payment will not be released in this chapter.</li> </ul>                                 |    |
|   |  |    | 2. Infrastructure of TCPs as per plan and KPIs   | <ul style="list-style-type: none"> <li>Deduction in case of non-completion observed even on one non-compliance.</li> </ul>  | 02 |
|   |  |    | 3. Zero Waste / Transportation of Waste to Dump Site as per plan and KPIs                                    | <ul style="list-style-type: none"> <li>Work deduction in case of non-compliance observed against the plan approved by the client</li> </ul>   | 03 |
| 6 | Bulk Waste Collection (C&D/AW) (Tonnage Based value) | 05 | 1. Waste Disposal through Digital Weighing System.   | <ul style="list-style-type: none"> <li>Real time VTCS Report through waste transported to designated dump site</li> </ul>   |    |
|   |  |    | 2. Deployment of dedicated fleet as per Plan, SOPs and KPIs  | <ul style="list-style-type: none"> <li>Deduction of waste collection activity of that day in case deficiency number increased to 10% of total number to be deployed/day.</li> </ul>   | 02 |

|              |                     |            |   |   |            |
|--------------|---------------------|------------|---|---|------------|
|              |                     |            | 3. Collection of Bulk Waste as per Plan, SOPs and KPIs                | <ul style="list-style-type: none"> <li>Deduction of waste collection in case of un-approved vehicle/trip by client.</li> </ul>  | 03         |
| 7            | Dumpsite Management | 05         | 1. Availability of Machinery and HR as per plans, SOPs and KPIs.      | <ul style="list-style-type: none"> <li>Deduction of waste disposal activity of that day in case deficiency number increased to 10% of total number to be deployed/day.</li> </ul> | 02         |
|              |                     |            | 2. Environment friendly disposal of waste as per plan, SOPs and KPIs. | <ul style="list-style-type: none"> <li>Deduction of waste disposal activity of that day in case non-compliance observed.</li> </ul>   | 03         |
| 8            | De-Silting          | 05         | 1. Deployment of Resources as per plan and KPIs                       | <ul style="list-style-type: none"> <li>In case, deficiency number increased to 10% or above, deduction of De-silting activity of that day</li> </ul>                              | 2          |
|              |                     |            | 2. Work done/completion as per Plan and KPIs                          | <ul style="list-style-type: none"> <li>Work deduction in case of activity impact is not as per the SOPs.</li> </ul>   | 3          |
| <b>Total</b> |                     | <b>100</b> |   |   | <b>100</b> |

Key Notes: Mechanism to verify DTD area collection, Dump Site Management for environmental friendly disposal of waste, de-silting activity, TCP management, Bulk waste collection etc. will be part of operational plan submitted by the contractor for approval of client based on SOPs / KPIs devised by client.



## OPERATIONAL PLANS

Contractor will submit the operational plans against each activity and RWMC will approve after reviewing the plans before execution of services under the contract. Any change / modification in plan after execution of contract shall be approved by the Client (With prior consent / approval of Board of Directors)

| Frequency  | Plans   | Bidder to Specify (Compliance)* |
|--|---|---------------------------------|
| Weekly   | Plan of Washing of Containers   |                                 |
|  | Plan of Repairing of Containers   |                                 |
|  | Deployment plan for Emergency Response Gang/Complaints/VVIP Movement  |                                 |
| Monthly  | Contractor will submit GIS based UC level operational model/plan with resources covering Door to Door & Container base collection, manual sweeping and waste transportation based on GIS Mapping. |                                 |
|  | De-silting Plan with deployment of resources both HR and Mechanical ensuring removal of De-Silted material.   |                                 |
|  | Sunday/Friday Market Cleaning Plan  |                                 |
|  | Mosque/Church/Imam Bargahs/Grave Yards cleaning/Washing Plan  |                                 |
|  | City Furniture Washing Plan   |                                 |
|  | Plot Clearance Plan   |                                 |
|  | Mechanical Sweeping and Mechanical Washing Plan   |                                 |
| Biannually   | Distribution Plan of Uniforms and PPEs  |                                 |
|  | Health and Safety Training Programs of Staff  |                                 |
|  | Plans of Counselling of field workers   |                                 |
| Yearly   | Execution Plan  |                                 |
|  | Procurement Plan  |                                 |
|  | Waste Recycling and Recovery Plan   |                                 |
|  | HSE Plan  |                                 |
|  | Ramzan Bazar Cleaning Plan  |                                 |
|  | Eid-ul Fitar & Eid ul Azha Plan   |                                 |
|  | Eid Milad Nabi Plan   |                                 |
|  | 9 <sup>th</sup> & 10 <sup>th</sup> Muharram   |                                 |
|  | Monsoon Plan  |                                 |
| Kashmir Day(5 <sup>th</sup> February), Defence Day (6 <sup>th</sup> September), 25 <sup>th</sup> December, 31 <sup>st</sup> December / 1 <sup>st</sup> January (New Year) etc. |   |                                 |

## PROPOSED MONITORING MECHANISM

| Sr<br>No                | Minimum Service Level  | Monitoring Frequency                   | Measuring/Monitoring Procedures   | Minimum Acceptable Level & Penalty  |
|-------------------------|--|--|---|---|
| <b>Waste Collection</b> |  |  |   |   |
| 1                       | Submission of operational plans of each activity i.e. DTD, CBC, Mech. Sweeping, Washing, TCP Clearance etc.                                  | At the time of execution of operations | The Client shall review these operational plans once received by the Client. Client Approval is mandatory for execution of the plan.          | <ol style="list-style-type: none"> <li>1. The service provider will submit the plans 15 days before the execution. 1lac/day penalty will be charged for delay.</li> <li>2. In case of failure, termination of the contract will be issued.</li> </ol>   |
| 2                       | Deployment of vehicles for each activity as per Plan approved by the client. (number and type of vehicles as per the activity schedule time) | Daily                                  | VTMS and/or RFID System at Workshops (As per execution plan).   | <ol style="list-style-type: none"> <li>1. 10,000/vehicle/day in case of failure to deploy.</li> <li>2. 2,000/vehicle/hour for delay in deployment.</li> <li>3. In case, the deficiency number increased to 10% or above, 3% deduction of Invoice of that day.</li> </ol>  |
|                         | Contractor will ensure the best working condition of all its vehicles by all means   | Daily                                  | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. 5,000/vehicle/day in case of breakdown in field. 2 hours resolution time after intimation will be observed for compliance.</li> <li>2. 2,000/vehicle/day for delay in improvement of aesthetics of vehicle.</li> <li>3. 5,000/vehicle/incident for un-covered transportation of waste.</li> </ol> |

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| 4 | Contractor will place at least (270) 0.8cm containers and (7) 5cm Containers in Tehsil (Area operational plan): with good aesthetic and working condition by all means. | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. 5,000/container/day in case of failure/shortage.</li> <li>2. 2,000/container/day for delay in repair.</li> <li>3. 2,000/container/day for delay in improvement of aesthetics of container.</li> <li>4. In case, deficiency number increased to 10% or above, 2% deduction of invoice of that day.</li> </ol>   |
| 5 | Door to Door collection from Residential Areas  | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. 2000/incident for non-compliance observed by supervisory officer, UC/Ward Committees or public Complaints.</li> <li>2. In case of citizen complaint, 3 hours resolution time after intimation will be observed for compliance.</li> <li>3. Deduction of 10% of invoice of that day in case number of observations/non-compliance/complaints increased to 100 per day.</li> </ol> |
| 7 | Ensure collection of all other wastes (i.e. Green Waste, animal waste, bulk waste etc.) Dedicated vehicles to be deployed.  | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. 10,000/vehicle/day in case of failure to deploy.</li> <li>2. 2,000/vehicle/hour for delay in deployment after intimation to the contractor.</li> </ol>   |

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| 8  | Ensure no waste scattered around bins  | Daily                | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism.   | <ol style="list-style-type: none"> <li>1. 2,000/container/incident. 2 hours resolution time after intimation will be observed for compliance.</li> <li>2. 3% deduction of Invoice of that day in case number increased to 10% of total containers approved as per plan.</li> </ol>   |
| 9  | Special Occasions waste collection (Eid and other public holidays)- Deployment of Resources as per plan issued by the Client | On Special Occasions | Client shall through Digital Monitoring Mechanism as well field monitoring through its employees /third party notified by the client on daily basis. | <ol style="list-style-type: none"> <li>1. 50,000/vehicle/day in case of failure to deploy.</li> <li>2. 10,000/vehicle/hour for delay in deployment.</li> <li>3. Deduction of 50% of invoice of that month in case contractor failed to execute at least 80% compliance of plan.</li> </ol>   |
| 10 | Completion of manual sweeping on main roads/commercial markets should be completed before 9:00am                             | Daily                | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.             | <ol style="list-style-type: none"> <li>1. 5,000/incident after 2 hours intimation to contractor.</li> <li>2. In case of citizen complaint, 3 hours resolution time after intimation will be observed for compliance.</li> <li>3. 5% deduction of waste collection/manual sweeping activity of that day in case number increased to 50 complaints/observations/Town/day regarding absent of worker or non-compliance of manual sweeping.</li> </ol> |

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| 11 | Completion of manual sweeping in residential areas should be completed before 10:00 AM.  |        | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | <ol style="list-style-type: none"> <li>1. 2,000/incident. After 2 hours intimation to contractor.</li> <li>2. In case of citizen complaint, 3 hours resolution time after intimation will be observed for compliance.</li> <li>3. 5% deduction of waste collection/manual sweeping activity of that day in case number increased to 100 complaints/observations/Town/day regarding absent of worker or non-compliance of manual sweeping.</li> </ol> |
| 12 | Sweeping and collection of waste from Sunday/ Friday Markets within 01 hour after its closure and before 06:00 AM on Monday/ Saturday. | Weekly | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. 50,000/incident/market.</li> </ol>   |
| 13 | Ensure agreed number of manual sweepers available in each UCs as per plan approved by the client.                                      | Daily  | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | <ol style="list-style-type: none"> <li>1. 2,000/worker/day in case of absence.</li> <li>2. 5% deduction of Invoice of that day in case number increased to 50 complaints/observations/Town/day</li> </ol>  |
| 14 | Presence of staff in Sunday/ Friday markets as per plan.   | Weekly | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | <ol style="list-style-type: none"> <li>1. 5,000/worker/incident in case of absence after 1 hour of intimation to contractor.</li> </ol>  |

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| 15 | Dedicated vehicles (vehicle dually approved by the Company for each trip) for Collection of C&D /GW/Animal Waste as per plan | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>10,000/vehicle/incident in case of non-deployment of resources.</li> <li>100% deduction of waste collection in case of un-approved vehicle/trip by client.</li> <li>2% deduction of Invoice of that day in case number increased to 10% of total number to be deployed/violation/day.</li> </ol> |
|----|--|-------|---|---|

### Machinery & Allied Equipment

|   |   |   |   |  |
|---|---|---|---|--|
| 1 | Contractor will ensure 100% availability of vehicles along with backup vehicles for each activity.  | Before the execution of the contract/services | Contractor will submit copies of documents for each vehicle registered with Excise and Taxation.  | <ol style="list-style-type: none"> <li>The service provider will submit the documents 15 days before the execution. 1lac/day penalty will be charged for delay.</li> <li>In case of failure, termination of the contract will be terminated.</li> </ol>  |
| 2 | Operational Number of Vehicles per day shall not less than 90% of the agreed quantity   | Daily   | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>10,000/vehicle/day in case number increased to 5% - 10%.</li> <li>50,000/vehicle/day in case number increased from 10% - 15%.</li> <li>100,000/vehicle/day in case number increased from 15% - 20%.</li> </ol>  |
| 3 | Placement of total number of containers / Bins as per approved plan by the client within 15 days of execution of the contract. Placement plan should be submitted 15 days before the execution of the contract. | Daily   | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>The service provider will submit the manufacturing/fabrication/procurement evidence 15 days before the execution. 1lac/day penalty will be charged for delay.</li> <li>5000/container/day will be applied in case of non-placement of container is less than 10% of the total number.</li> <li>Deduction of 1% of invoice in</li> </ol> |

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|   |   |       |   | case deficiency number increased to 10% . Termination of Contract may lead if deficiency increased from 30%   |
| 4 | Relocation of waste bins placed at improper places within 24 hours of intimation/complaint.   | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 2000/container/day   |
| 5 | Aesthetic of Container Paint/Washing / cleaning.  | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 5000/container/day<br>2. Deduction of 1% of invoice in case observations number increased to 10%   |
| 6 | Deployment/Provision of total number of Hand carts as per approved plan by the client within 15 days of execution of the contract. Provision plan should be submitted 15 days before the execution of the contract. | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. The service provider will submit the manufacturing/fabrication/procurement evidence 15 days before the execution. 1lac/day penalty will be charged for delay.<br>2. 5000/handcart/day will be applied in case of non-provision of Hand cart. |
| 7 | Collection vehicle shall be spillage proof. In case of the spillage on the roads while transportation. The Company shall be penalized.  | Daily | Field-based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 10,000/incident.   |
| 8 | 100% Clearance of Fly Tipping   | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 10,000/incident.   |

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| 9  | Aesthetic of vehicle<br>Paint/Washing/ cleaning.  | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 25,000/vehicle/day   |
| 12 | Deployment/Provision of all allied equipment (Uniforms, Brooms, Shoes, Gloves, Jackets, Bags, Lime, Phenyl, Scrapping Tools etc) as per approved plan by the client within 15 days of execution of the contract. Provision plan should be submitted 15 days before the execution of the contract. | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. The service provider will submit the manufacturing/fabrication/procurement evidence 15 days before the execution. 1lac/day penalty will be charged for delay.</li> <li>2. 2000/incident/item/day will be applied in case of non-provision.</li> <li>3. 2% Work deduction of manual sweeping activity in case number of complaints/observations increased to 100 individually/collectively.</li> </ol> |
| 13 | Contractor will ensure fitness certificates of each vehicle from concerned Govt. Department/Agency on annual basis. Certificates must be submitted in 1st quarter of each calendar year   | Daily | Provision of Certificates by the Contractor   | 1. 10,000/vehicle/day in case of non-compliance.  |

### Mechanical Sweeping & Washing

|   |   |       |   |   |
|---|---|-------|---|---|
| 1 | 100% of the tanks of the mechanical sweepers/Washers should be full of water before vehicles departs from the workshop. | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 10,000 / incident  |
| 2 | Completion of the task by each vehicle as per schedule approved by the Client.  | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | <ol style="list-style-type: none"> <li>1. 10,000 / incident/ over speed working</li> <li>2. 2% deduction of total invoice of that day in case of activity impact is not as per the SOPs.</li> </ol> |
| 3 | There should be zero dust layer on the road after Mech.   | Daily | Field based monitoring by the Client/third party  | 1. 3% deduction of total invoice of that day in   |



|   |   |       |   |   |
|---|---|-------|---|---|
|   | Sweeping/Washing  |       | notified by the client by Digital Monitoring Mechanism  | case of activity impact is not as per the SOPs. |
| 4 | Brushes should in acceptable condition to ensure quality sweeping.                    | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 10,000 / incident                            |
| 5 | Emptying of mechanical sweeper at notified disposal points.                           | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 20,000 / incident                            |
| 6 | Mechanical sweeping should be completed before 05:00 AM in case of night operation. . | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 20,000 / incident                            |
| 7 | The working speed of mechanical sweeper not more than 15 kilometres per hour.         | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 10,000 / incident                            |
| 8 | Helpers should be present with vehicle as per plan                                    | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 1. 10,000 / incident                            |
| 9 | In case of complaint deployment of required number of vehicles within 02 hour.        | Daily | Field based monitoring by the Client/third party notified by the client by Digital Monitoring Mechanism                                       | 20,000 / incident                               |
|   |   |       |   |   |

**Waste Transfer and Transportation**

|   |  |       |   |  |
|---|--|-------|---|--|
| 1 | The transfer station will be operational 24/7 except maintenance days. In case it is non- operative the Company has to make it operational within 24 Hrs of Client Notice. | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 100,000 / incident/day  |
| 2 | Keep the Transfer Station at zero on daily basis.  | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | 1. 5% deduction of total invoice of that day in case of non-completion observed. |
| 3 | Transfer Stations must be covered (10ft high walls) surrounding covered by plantation.   | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | 1. 5% deduction of total invoice of that day in case of non-completion observed. |
| 4 | Platform of Transfer Station must be solid, to avoid any digging of soil/ensuring ground contamination.  | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | 1. 5% deduction of total invoice of that day in case of non-completion observed. |

| Human Resource |   |       |   |  |
|----------------|---|-------|---|--|
| 1              | Attendance of the Workers should not be less than 75% of the workforce (As per the activity plan) | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. Digital Monitoring Mechanism.      | 1. 5,000 / worker/day<br>2. Deduction of manual sweeping activity of that day in case number increased to 50 complaints/day regarding absence of worker.<br>3. 10% deduction of invoice of that day in case of number exceed from 25% absents. |
| 2              | Attendance of Supervisory and management staff should not be less the 90% in any case             | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 25,000 / staff/day<br>2. 10% deduction of invoice of that day in case of number exceed from 25% absents.  |

|   |   |       |   |                          |
|---|---|-------|---|--------------------------|
| 3 | 100% workers of all categories shall wear uniform.  | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 5,000 / worker/day    |
| 4 | Attendance of workers should be completed before 6:00 A.M (at designated time & location approved by the client) at the designated locations. | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 25,000 / incident/day |
| 5 | Sweeping staff should be working in their respective beats.   | Daily | IT based as well as filed monitoring by the Client supervisory persons/third party notified by the client. VTMS/Digital Monitoring Mechanism. | 1. 5,000 / worker/day    |